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MERCURY AND PCBs IN FISH USED AS A MAJOR FOOD SOURCE BY  
NORTHWESTERN ONTARIO NATIVE PEOPLES.

A.F. Johnson, A.L. Vaillancourt and C.M. Cox, Water Resources Branch, Ontario Ministry of the Environment, Toronto, Ontario, M4V 1P5.

Abstract

As a result of the discovery of elevated PCB levels in the blood of native people living in isolated Northern communities, extensive surveys of the contaminants in fish from Big Trout Lake and Weagamow (Round) Lake - area lakes were undertaken in 1988. Analysis of 800 fish for mercury, PCBs and organochlorine pesticides revealed that fish were only a minor potential contributor of PCB's to the human diet. Certain species and sizes of fish were an important source of mercury to the diet. The results indicate the need for careful assessment and additional research on the dietary pathways of contaminants which may affect human populations.

Report

Figures 1 to 5 show the best-fit mercury versus fish length regressions for Walleye, Northern Pike and Lake Trout collected from the studied lakes. Larger specimens of these species were found to exceed the 0.2 ppm Federal Health & Welfare Canada guideline for maximum mercury concentration in fish consumed by those for whom fish is the basic source of protein in the diet. Figure 6 indicates that some individuals showed slightly elevated blood mercury levels, likely as a result of heavy fish consumption.

Figure 7 presents the Health & Welfare Canada data which prompted the analysis of large numbers of sport fish. It had been at first assumed that fish, a staple of the diet, would be high in PCBs.

Figure 8 shows that fish of several species, and even the carcass of Lake Trout were very low in PCBs. Tern's eggs (apparently consumed seasonally by some residents) and the Common Loon and Red Breasted Merganser (Fish Duck), which are also eaten, are very high in PCBs. Figure 9 indicates that single 117 gram meals of Tern's eggs, Loon meat or Fish Duck meat would provide a dose of PCBs to the consumer in excess of the Tolerable Daily Intake of PCBs of 1 microgram per kilogram body weight established by Health & Welfare Canada. Fish would provide only a small fraction of the Tolerable Daily intake of PCBs permitted.

Figure 1

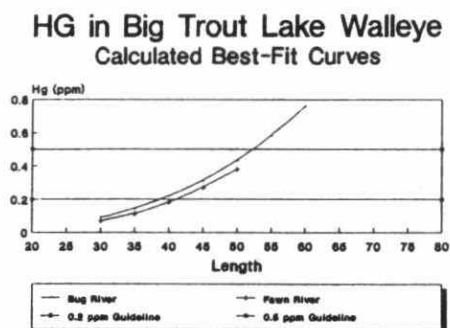


Figure 2

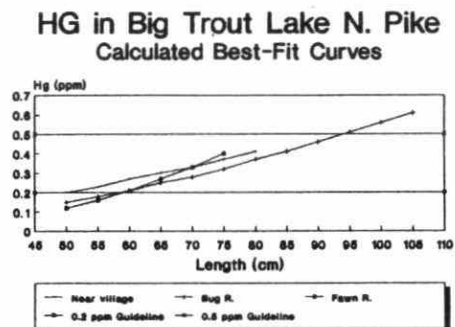
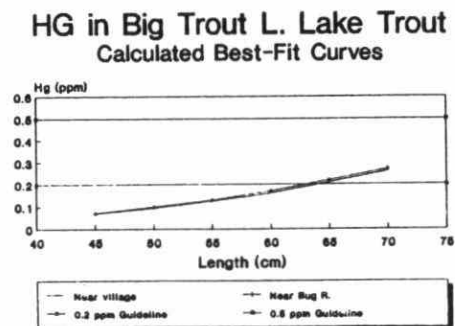
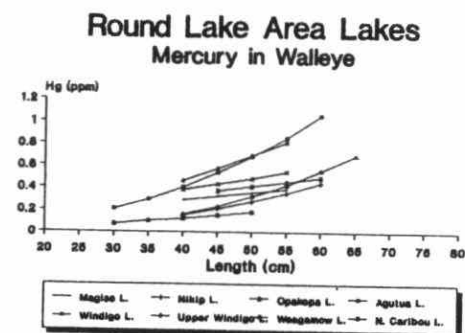


Figure 3



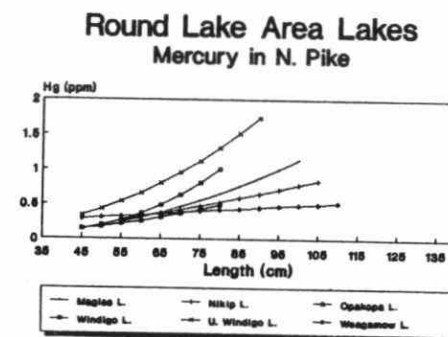
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Figure 4



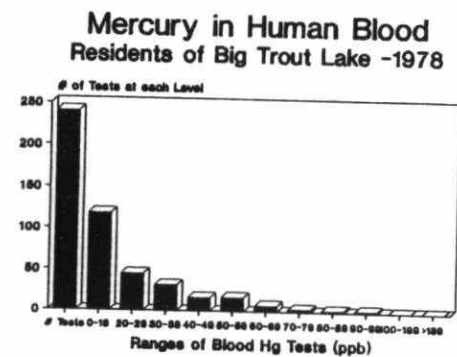
0.2 ppm Hg limit for high fish consumers

Figure 5



0.2 ppm Hg limit for high fish consumers

Figure 6



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Figure 7

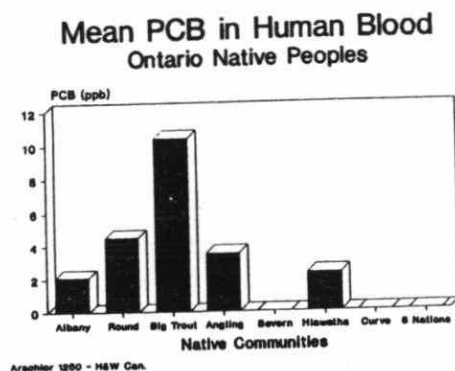
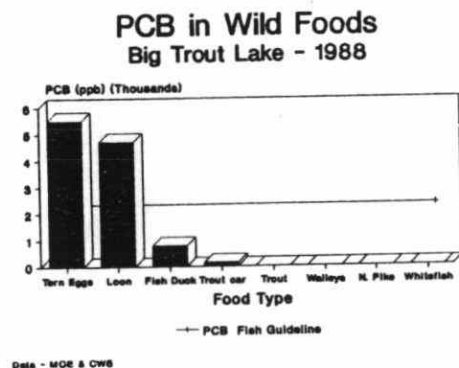
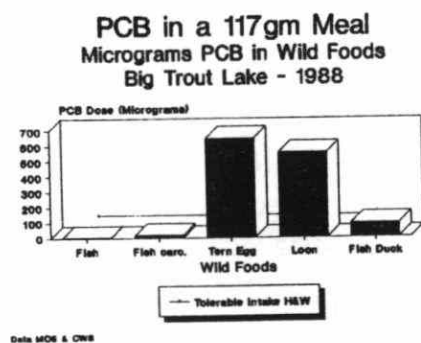


Figure 8



Data - MOE & CWS

Figure 9



Data MOE & CWS



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